

What is claimed is:

- SUB A' 7
1. A method of inducing a cytotoxic immune response against a preselected cell-type in a mammal, the method comprising:
administering to the mammal (i) an immunoconjugate comprising an antibody binding site capable of binding the preselected cell-type and a cytokine capable of inducing a said immune response against the preselected cell-type, and (ii) an angiogenesis inhibitor in an amount sufficient to enhance said immune response relative to immunoconjugate alone.
 2. The method of claim 1, wherein the preselected cell-type is a cancer cell.
 3. The method of claim 1, wherein the preselected cell-type is a virus-infected cell.
 4. The method of claim 1, wherein the angiogenesis inhibitor is co-administered together with the immunoconjugate.
 5. The method of claim 1, wherein the angiogenesis inhibitor is administered prior to administration of the immunoconjugate.
 6. The method of claim 1, wherein the antibody binding site comprises, in an amino-terminal to carboxy-terminal direction, an immunoglobulin variable region, a CH1 domain, and a CH2 domain.
 7. The method of claim 6, wherein the antibody binding site further comprises a CH3 domain attached to the carboxy terminal end of the CH2 domain.
 8. The method of claim 1, wherein the immunoconjugate is a fusion protein comprising, in an amino-terminal to carboxy-terminal direction, (i) the antibody binding site comprising an immunoglobulin variable region capable of binding a cell surface antigen on the preselected cell type, an immunoglobulin CH1 domain, an immunoglobulin CH2 domain, and (ii) the cytokine.
 9. The method of claim 8, wherein the antibody binding site further comprises a CH3 domain interposed between the CH2 domain and the cytokine.

10. The method of claim 1, wherein the cytokine of the immunoconjugate is selected from the group consisting of a tumor necrosis factor, an interleukin, a colony stimulating factor, and a lymphokine.

11. The method of claim 1, wherein the angiogenesis inhibitor is selected from the group consisting of an endostatin, angiostatin, a peptide having binding affinity for $\alpha_v\beta_3$ integrin, an antibody having binding affinity for $\alpha_v\beta_3$ integrin, a peptide with binding affinity for an EGF receptor, an antibody having binding affinity for an EGF receptor, a COX-2 inhibitor, fumagillin, thalidomide, an anti-angiogenic cytokine and a cytokine fusion protein.

12. A method of inducing a cytotoxic immune response against a cancer cell in a mammal, the method comprising:

administering to the mammal (i) an immunoconjugate comprising an antibody binding site capable of binding the cancer cell and a cytokine capable of inducing a said immune response against the tumor cell, and (ii) an angiogenesis inhibitor selected from the group consisting of endostatin and angiostatin in an amount sufficient to enhance said immune response relative to immunoconjugate alone.

13. The method of claim 12, wherein the angiogenesis inhibitor is co-administered together with the immunoconjugate.

14. The method of claim 12, wherein the angiogenesis inhibitor is administered prior to administration of the immunoconjugate.

15. The method of claim 12, wherein the antibody binding site comprises, in an amino-terminal to carboxy-terminal direction, an immunoglobulin variable region, a CH1 domain, and a CH2 domain.

16. The method of claim 15, wherein the antibody binding site further comprises a CH3 domain attached to the carboxy terminal end of the CH2 domain.

17. The method of claim 12, wherein the immunoconjugate is a fusion protein comprising, in an amino-terminal to carboxy-terminal direction, (i) the antibody

Sub B5

binding site comprising an immunoglobulin variable region capable of binding a cell surface antigen on the preselected cell type, an immunoglobulin CH1 domain, an immunoglobulin CH2 domain, and (ii) the cytokine.

Sub C8

18. The method of claim 17, wherein the antibody binding site further comprises a CH3 domain interposed between the CH2 domain and the cytokine.

Sub A4

19. The method of claim 12, wherein the cytokine of the immunoconjugate is selected from the group consisting of a tumor necrosis factor, an interleukin, a colony stimulating factor, and a lymphokine.

20. A composition for inducing an immune response against a preselected cell-type in a mammal, the composition comprising in combination:

(i) an immunoconjugate comprising an antibody binding site capable of binding the preselected cell-type and a cytokine capable of inducing an immune response against the preselected cell-type in the mammal, and

(ii) an angiogenesis inhibitor in an amount sufficient to enhance said immune response induced by the immunoconjugate of the combination relative to immunoconjugate alone.

21. The composition of claim 20, wherein the antibody binding site comprises in an amino-terminal to carboxy-terminal direction, an immunoglobulin variable region, a CH1 domain and a CH2 domain.

22. The composition of claim 21, wherein the antibody binding site further comprises a CH3 domain attached to the C-terminal end of the CH2 domain.

23. The composition of claim 20, wherein the immunoconjugate is a fusion protein comprising, in an amino-terminal to carboxy-terminal direction, (i) the antibody binding site comprising an immunoglobulin variable region capable of binding a cell surface antigen on the preselected cell type, an immunoglobulin CH1 domain, an immunoglobulin CH2 domain, and (ii) the cytokine.

Sub B7

24. The composition of claim 23, wherein the antibody binding site further comprises a CH3 domain interposed between the CH2 domain and the cytokine.

Sub C11

25. The composition of claim 20, wherein the cytokine of the immunoconjugate is selected from the group consisting of a tumor necrosis factor, an interleukin, a colony stimulating factor, and a lymphokine.

26. The composition of claim 20, wherein the angiogenesis inhibitor is selected from the group consisting of an endostatin, angiostatin, a peptide having binding affinity for $\alpha_v\beta_3$ integrin, an antibody having binding affinity for $\alpha_v\beta_3$ integrin, a peptide with binding affinity for an EGF receptor, an antibody having binding affinity for an EGF receptor, a COX-2 inhibitor, fumagillin, thalidomide, an anti-angiogenic cytokine and a cytokine fusion protein.

27. The composition of claim 20, wherein the preselected cell-type is a cancer cell.

DECEMBER